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THE AMERICAN COOT IN IOWA

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For major studies in waterfowl, rail, and shore bird problems the natural lake and marsh region of northwest Iowa is proving to be highly valuable. This region lies in the Wisconsin glacial drift area which enters the state at its northern boundary and extends southward to Des Moines, the state capitol. Approximately twenty-one counties of northern and central Iowa, representing about one-fifth of the state's area, are covered by the Wisconsin glacial drift of boulders, sand, silt and clay.

The Wisconsin drift area is bordered on the east by the older and well-drained Iowa glacial drift. To the west is found the well-drained region of deep Missouri loess, wind-blown soil from the far West, and to the south lies the thinner Southern Iowa loess. Underlying these uppermost soils is the Kansas glacial drift material generally known as blue clay, indicating the characteristic color and texture of the unweathered components.

In the nearly level Wisconsin drift area the underlying blue clay of the Kansas glacial till forms the tough and impervious bottom for numerous lake, marsh, and pothole sites, many of which have been drained. With miles of dredged ditches and with many more miles of underground drain tile much of the accumulating surface water is carried quickly away from the Wisconsin drift. Where proper drainage is feasible a stable general agriculture is established because in many cases the original high costs of drainage were met during the first twenty years of this century, a period of increasing demands for cereal and animal food products and consequently higher prices and profits to the farmer.

But even during the period of highest prices some of the lakes, marshes, and potholes could not be drained profitably. Particularly near the edges of the Wisconsin drift characteristic glacial morainic hills make possible a number of deep clear water lakes such as Spirit, Okoboji, Clear, and Storm Lakes that are well known for fishing and

other forms of lake recreation. These recreational values are so high that the deep water lakes are quite safe from man's drainage proclivities. The Iowa State Conservation Commission has jurisdiction over sixty-five of the large natural lakes and most of these are in the Wisconsin glacial region. In addition several hundred lakes and marshes and several thousand potholes under private ownership remain to attract waterfowl and other water life. Most of these bodies of water are valued highly in the recent years of drought, and their wildlife products yield profitable returns.

Now it appears evident that these lakes, marshes, and potholes are to be available for better management of wildlife throughout many years to come. From them some economic returns to the state and to individual owners are possible, and immeasurable recreational values are apparent. Characteristic of our present civilization is the general acceptance of original investigation and research to enhance economic returns and other values in all pursuits and fields of human endeavor. Hence the proper utilization of the water bodies of the lake region of Iowa presents numerous problems around each form of wildlife and in the inter-relations between the many living forms.

Intensive research is underway with several of the more valuable animals of this region, and many casual observations are made with other forms of wildlife. Characteristic of the marshes is the American Coot (*Fulica americana americana* Gmelin). Without devoting long periods of time to observation the authors during several past years have accumulated some data which will be of value in the management of the Coot.

In 1933, the spring migration flight was observed closely by Bennett at Mud Lake, Clay County. The first Coots arrived March 10 and the last ones apparently were in by April 15. In total, it was estimated that 20,000 Coots rested for a time on this one marsh, then of about 350 acres in area. No noticeable decline in numbers of migrating Coots was apparent in this particular region during the past four years.

Next of particular interest was the number of Coots remaining to nest at particular marshes and the nesting capacities of these bodies of water. In late June, 1932, Mud Lake, of about 350 acres in area and with water to a depth of about two feet, showed less than 10 per cent of its surface as open water. The remainder was hidden by vegetation of which the sedge (*Carex riparia*) and the bulrush (*Scirpus fluviatilis*) were dominant species. On June 25 of that year 189 Coots' nests were counted on one-fourth of the marsh; no count nor estimate was made

of the numbers of nests in the remaining three-fourths. In the summer of 1935 approximately 100 pairs of Coots were resident on the same marsh. In that year the depth of the water had increased to three feet and about one-third of its surface was open. The dominant plants of the remaining two-thirds were the bulrushes (*Scirpus occidentalis*, *S. validus* and *S. fluviatilis*). During the same summer thorough search revealed only eleven Coots' nests on Goose Lake, Hamilton County, of eighty acres in area and with about one-third of its area in open water; the bulrushes (*Scirpus occidentalis*, *S. validus*), the cattail (*Typha latifolia*), and the arrowhead (*Sagittaria latifolia*) were dominant emergent plants. The largest number of Coots seen in a single day on Goose Lake was twenty.

The small number of nests on Goose Lake was thought to be due in part to the clogging of parts of the marsh by islands of decaying vegetation according to Hendrickson (1936). Also the old proeminent stems among the new growth in many places made a very dense condition in which it was very difficult for the female to build. One was observed to start a nest in such a place, but it was not completed. Eight nests were in a small area of less dense vegetation, some in cattails and some in bulrushes; three nests in July were built in the stand of arrowhead and the fresh leaves and stems of the plant were used in the nests. At Mud Lake, 1932 and 1935, the nests were built chiefly with stalks of sedges and bulrushes. At neither season was Mud Lake so clogged with debris as Goose Lake in 1935. It would appear that a dense deposit of old stems of marsh vegetation which interfered with anchoring the nest to new vegetation prevented more satisfactory nesting.

The dimensions of the nests were about fourteen inches in diameter and about eight inches of material above the water, conforming with observations recorded by Bent (1926). Many of the nests had ramps of stems to enable the Coots to ascend to and descend from the nest. Fresh growth of rushes clogged with much old submerged material would not permit of building such ramps readily. Five to eight inches of each nest were below the surface of the water, and the nest was generally anchored to fresh vegetation. Such nests moved up and down with wave action and consequently did not become wet far above the water line. And thus also, drifting and submergence were prevented with sudden rises in the lake such as the 10-inch rise of Mud Lake on July 17 and 18, 1935, following a rainfall of 2.5 inches. Most of the nests rose with the water and remained safely anchored. Perhaps a balance between proper water depth for bulrushes, cattails,

nesting Coots, other marsh nesting birds, and muskrats may be ascertained. The muskrats of the correct number would prevent clogging of the marsh with excessive quantities of old stems of water plants, and help to provide open areas of water for feeding and other activities of Coots and ducks.

Data concerning the nesting dates and number of eggs were not so easily obtained. On June 25, 1932, twenty-two of the 189 nests on Mud Lake contained eggs, varying from one to twelve eggs in a nest and with a mean of between five and six eggs per nest. In 1935, during late June and July, Friley observed forty-two nests that had 292 eggs, a mean of between six and seven eggs per nest; the number of eggs per nest varied from four to eleven. At the same time eleven nests were found on Goose Lake, a marsh of eighty acres, and only three of them contained eggs, in number per nest three, four, and seven (Hendrickson, 1936). The mean number of eggs in a nest for all sixty-seven nests lies between six and seven.

In 1935 the latest date of hatching at Mud Lake was July 24, whereas on Goose Lake the latest date was probably in early August for a nest of four fresh-looking eggs was seen July 15 and the incubation period is twenty-one or twenty-two days as given by Bent (1926).

Records of the hatching from forty-two nests on Mud Lake, 1935, showed that approximately as many days were required for hatching of a single brood as there were eggs in a nest. For example, from one clutch of seven eggs the first chick hatched July 17 and the last on July 24: a freshly hatched chick appeared on each day except one. The adults were over the eggs regularly during the hottest hours of the day and at night. Perhaps they warmed the eggs during cooler hours and kept them cooler during the hottest hours in order to insure a rather uniform temperature of incubation. The hatching rate in 1935 reached the high point of 98 per cent among 292 eggs of forty-two nests.

Although the freshly hatched Coots usually remained on the nest until they were dry, a number of times young were seen to crawl out and fall into the water very soon after hatching. These birds started to swim immediately. The very young Coots appeared to be head-heavy and they intentionally dived very frequently and easily, if not at times accidentally. After several closely repeated dives, the young bird either lost its fear of the observer or became too nearly exhausted to dive again; or perhaps, as it often came up covered by plant material, the chick may have considered itself to be hidden. Although the hatching of larger broods was common the highest number of young ever seen on the water with a single adult was five, and two to four

were often observed as a probable brood. Perhaps accidental drowning accounted for a part of the high mortality among the chicks for in 1932 two very young Coots, after diving, became entangled in vegetation and might have drowned if they had not been freed by the observer.

Observations on the feeding of the captive young Coot were made in June, 1935, and Hendrickson (1936) told of the bird's preference for whitish food materials and demands to be fed rather than find and pick up food for itself. Later in the summer of 1935 Friley continued observations on feeding of the young in the open on Mud Lake. Adults with young around them were observed to dive and bring up blanched portions of vegetation. As soon as the adult came up the young rushed to take the food from its bill. Sometimes a tug-of-war followed the seizing of a large morsel by two chicks. Occasionally a young Coot dived and brought up food for itself, but as often the dive appeared to be unsuccessful. To what age the young continued to be fed by parents was not learned, but several broods known to be at least three weeks old were seen to take food regularly from the bills of adults.

The loss of Coots to predators was studied somewhat. Among several thousand Great Horned Owl pellets gathered in the vicinity of Mud Lake and other marshes of northern Iowa, Mrs. F. N. Hamerstrom found Coot remains in only twenty-two pellets, of which nineteen contained evidence of adult Coots and the others showed bones of young Coots. There was no direct evidence that muskrats were destructive to Coots though muskrats were occasionally seen to use Coots' nests as feeding stations. But it was not learned whether or not the eggs or young had been destroyed by muskrats. Bennett observed remains of young Coots in mink feces frequently in the vicinity of Mud Lake, during several recent summers.

The inter-relations between Coots and other marsh nesting birds were observed to some extent. In the summer of 1935, Mud Lake carried, in addition to about 100 pairs of nesting Coots, a colony of nesting Eared Grebes, over sixty pairs of nesting Pied-billed Grebes, at least twenty pairs of nesting American and Eastern Least Bitterns, ten Ruddy Ducks' nests, eleven Redheads' nests, numerous nesting King and Virginia Rails and Soras, numerous nesting Florida Gallinules, many nesting Forster's and Black Terns, many nesting Prairie and Short-billed Marsh Wrens, many nesting Yellow-headed Blackbirds and Red-wings, and numerous nesting Swamp Sparrows. A fairly heavy population of muskrats was supported on the lake that summer.

In the summer of 1932 there were at least twice as many Coots on the marsh, but no diving ducks, no Eared Grebes, and other species of birds were less numerous. Forster's Terns were seen often to attack Coots and drive them from the vicinity of terns' nests and young.

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BACHMAN'S SPARROW IN THE NORTH-CENTRAL PORTION OF ITS RANGE

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SCOPE OF THE STUDY

The latest (1931) edition of the A. O. U. Check-List gives the breeding range of Bachman's Sparrow (*Aimophila aestivalis bachmani* Audubon) as "Upper and Lower Austral zones in central Illinois (locally to southeastern Iowa), southern Indiana, southern Ohio, extreme southwestern Pennsylvania, and central Virginia south to central Texas, Louisiana, Mississippi, Alabama, and northwestern Florida." The present paper attempts a survey of this species as it occurs in West Virginia, southwestern Pennsylvania, and southeastern Ohio, with some notes on its occurrence in Virginia, Maryland, Kentucky, and Tennessee. It will be seen that this territory occupies a position in the north-central portion of the bird's breeding range, roughly midway between central Virginia and central Illinois. In the Check-List West Virginia is not specifically mentioned as within the breeding range, being included by implication only, nor is there any mention of Maryland. Data hereinafter included will show the regular (sometimes common) occurrence of Bachman's Sparrow in West Virginia, and its occurrence, at least occasionally, in western Maryland.

HISTORY

Within the territory covered by this paper the first record for Bachman's Sparrow was made in southeastern Ohio. Dr. Lawrence Hicks (in mss.) supplies the following data: "The first Ohio record was a specimen taken by Rev. W. F. Henninger on April 23, 1897, with others observed on May 3 and 6 of the same year, near South Webster in the Portsmouth region. The species was not heard from again until a specimen was taken by C. M. Weed August 18, 1900, at